Claims

1. A multi-sensory stimulation system comprising:

an inlet for receiving a flow of liquid or gas;

a conditioning system for drawing the flow of at least one of liquid, gas and electricity (the **Flow**) through the inlet, the conditioning system comprising two or more conditioning modules for conditioning the Flow according to a respectively different sensory modality;

an outlet for delivering the conditioned Flow,

wherein the system further comprising a gustatory stimulator shaped to be received in a mouth of a user, the gustatory stimulator comprising at least one electrical stimulation device for delivering at least one of electrical stimulation and thermal stimulation to a tongue of the user;

wherein the system further comprising a contact somatosensory stimulator comprising one or more motorised units located, in use, near skin of the user to apply a force to the skin, and/or one or more electrode patches for delivering electrical stimulation to at least one muscle of the user.

2. The multi-sensory stimulation system according to claim 1, wherein:

the inlet comprises two or more inlet apertures, and the Flow comprises an independent flow to each of a corresponding two or more of said conditioning modules; and/or

the outlet comprises two or more outlet apertures, and the Flow comprises an independent outflow for each outlet aperture.

3. The multi-sensory stimulation system according to claim 1 or 2, comprising a control module, the control module:

receiving event information from an environment simulation engine, the event information specifying particular sensory stimuli in a virtual environment comprising the user; and

activating at least one said conditioning module according to the event information.

4. The multi-sensory stimulation system according to claim 3, wherein the event information comprises duration information specifying a duration of activation of the at least one conditioning module.

5. The multi-sensory stimulation system according to claim 3 or 4, wherein the event information comprises intensity information specifying an intensity of activation of the at least one conditioning module.

6. The multi-sensory stimulation system according to claim 5, wherein the intensity information comprises a time-varying intensity profile, and the intensity of activation of the at least one conditioning module varies over time according to the intensity profile.

7. The multi-sensory stimulation system according to any one of claims 3 to 6, wherein the event information comprises location information.

8. The multi-sensory stimulation system according to any one of claims 3 to 7, wherein at least one conditioning module is an olfactory stimulation module comprising at least one aroma chamber containing a scent, each aroma chamber being configured to deliver the respective scent into the Flow and the conditioned Flow thereby comprising a scented Flow.

9. The multi-sensory stimulation system according to claim 8, comprising a plurality of said aroma chambers each of which contains a different scent.

10. The multi-sensory stimulation system according to claim 9, wherein the event information comprises a scent profile and the control module is configured to activate two or more aroma chambers according to one or more scents specified in the scent profile.

11. The multi-sensory stimulation system according to any one of claims 3 to 10, wherein at least one conditioning module is a thermal stimulation module comprising a temperature conditioning element configured to control a temperature of the Flow and the conditioned Flow thereby comprising a temperature controlled Flow.

12. The multi-sensory stimulation system according to any one of claims 3 to 11, wherein at least one conditioning module is a somatosensory module for changing a speed of the Flow to thereby apply a non-contact haptic stimulus to the user upon delivery through the outlet.

13. The multi-sensory stimulation system according to any one of claims 3 to 12, wherein the event information further comprises direction or orientation information specifying a direction along which to apply the condition Flow.

14. The multi-sensory stimulation system according to any one of claims 1 to 12, comprising a mount portion for connection to a head mounted display to secure the system in relation to a head of the user.

15. A wearable multi-sensory stimulation assembly comprising:

a wearable member configured to be worn by a user; and

one or more multi-sensory stimulation systems according to any one of claims 2 to 14, located on the wearable member to enable directional stimulation of at least one sensory system of the user when wearing the assembly.

16. The wearable multi-sensory stimulation assembly of claim 15, wherein the wearable member comprises a garment wearable on a chest of the user, the assembly comprising a plurality of said multi-sensory stimulation systems located around a collar of the garment.

17. The wearable multi-sensory stimulation assembly of claim 15 or 16, further comprising a contact thermal stimulator comprising one or more thermal elements located, in use, near skin of the user to control a temperature of the skin.

18. The wearable multi-sensory stimulation assembly of any one of claims 15 to 17, further comprising a contact somatosensory stimulator comprising one or more motorised units located, in use, near skin of the user to apply a force to the skin, and/or one or more electrode patches for delivering electrical stimulation to at least one muscle of the user.

19. The wearable multi-sensory stimulation assembly of claim 17 or 18, wherein the event information further comprises orientation or direction information specifying a direction along which the apply heating, cooling or force to the skin.

20. The wearable multi-sensory stimulation assembly of any one of claims 15 to 19, wherein the wearable member comprises a head mounted display and at least one said multi-sensory stimulation system is mounted on the head mounted display.

21. The wearable multi-sensory stimulation assembly of claim 20, comprising a plurality of multi-sensory stimulation systems mounted on the head mounted display.

22. The wearable multi-sensory stimulation assembly of claim 15 or 16, further comprising an auditory stimulator located on the head mounted display located to deliver an audial signal to the user.